PREDISPOSING FACTORS TO PELVIC RELAXATION AND PROLAPSE (ETIOLOGY)

By JOHN VRUWINK *

Constitutional inferiority or debility plays a tremendous role in the causation of prolapse. Birth may tear or stretch the pelvic supports and suspensory structures so that herniation of pelvic contents occurs. Ill-advised mechanical measures to hurry labor increase the probabilities of hernia, and judicious interference under definite conditions and for definite purposes decreases the dangers of hernia. Finally, apparently normal women with normal passenger passage and powers under competent guidance may still develop more or less relaxation and even hernia following labor.

Adequate prenatal care to increase resistance, competent management of labor to eliminate tissue damage, and careful postpartum care to restore normality of tissue, does further safeguard women from the discomfort and disability of prolapse.

DISCUSSION *by Norman H. Williams, Los Angeles; Henry A. Stephenson, San Francisco.*

THAT our knowledge of pelvic prolapse is still incomplete, is recognized by the absence of standard treatment. The fact that hernia is a definite factor in pelvic prolapse is coming to be generally recognized, and much confusion is eliminated by the knowledge that there are several varieties of hernia. They have a common cause, but the eventual pathology depends not only on the original location and extent of the lesion, but upon the age of the patient, duration of the lesion, subsequent activity with increased intra-abdominal pressure, tonicity of tissues, sepsis, repeated pregnancies, and labor.

The normal support of the pelvic organs depends upon the adequate function of each structure in the pelvis. The suspensory and supporting apparatus are interrelated, with a uniform function, and are even anatomically inseparable. The endopelvic fascia is the chief supporting agency, and in the healthy woman is probably more important than the suspensory supports. Lesions in the pelvic supports may be in one or several places, and hernia follows one or more of the four lines of cleavage described by Dickinson. Such pathological conditions are generally a cystocele, rectocele, and prolapse of the uterus; not uncommonly an enterocele or urethrocele. Only occasionally do the structures intimately associated with the posterior of the pubis or posterior to the rectum prolapse.

The occurrence of hernia may be congenital or acquired. Congenital pelvic hernia constitutes about 2 per cent of all prolapses. It obviously depends upon incomplete development and congenital weakness of the supporting and suspensory tissues. Physicians are more particularly concerned with the acquired form, which practically always is the sequellae of pregnancy, labor, or abortion. Therefore, its etiology is associated with the anatomy of the pelvis and the mechanism and management of labor or abortion.

The pelvic structures of one woman, in spite of violence, may be adequate to prevent the formation of hernia, while in another even minimal trauma may be followed by various degrees of prolapse, including procidentia. The view is expressed by some that all forms and types of relaxation are due to inadequate or constitutional inferiority of tissue. It is reasonable to assume that constitution undoubtedly plays an important part in the developmental formation of muscle, ligaments and fascia, and we may reasonably assume that defective tissue is of primary importance as a predisposing factor in pelvic prolapse. Tissues, ill-constructed to withstand strain, with no power of elasticity, tear easily; tissues may stretch inordinately with resulting relaxation; or diastasis may occur, and hernia be an eventual consequence. Diet, outdoor life, and exercise play a dominant part in strengthening pelvic tissues and thus in preventing prolapse. There is an unwarranted accusation against the strong tissues and muscles of the athletic type of woman. But even so, there is little danger of revamping the ordinary or subnormal type into an athlete, regardless of strenuous efforts to do so in nine months, under the conditions imposed by pregnancy.

The maternal injuries of childbirth depend in part on the constitutional integrity of tissues, and in part on the mechanism and management of labor. *Every normal birth causes trauma of tissue.* Repeated births, particularly frequent births, increase this damage, and abnormal births are extremely liable to extend such injuries. The violence associated with precipitant or poorly managed labor is quite likely to increase the extent of injuries, and impair the function of the supporting and suspensory structures.

Prolapse of the upper segment of the pelvis usually follows damage to the supporting structures which center about the cervix. Relaxations of the lower plane center about injury to muscle and fascia forming the perineum.

Watkins says that injury occurs near the cervix both in bladder prolapse and in high rectocele, and that the tear is transverse because of a longitudinal force. Internal rotation occurs when the presenting part is in the cavity but still in intimate connection with the cervix, and such force is delivered transversely. The grinding, rotating action at this phase of the mechanism of labor is a potent cause of laceration and supplemental relaxation of the supporting tissue of the upper segment. Active measures to hurry labor before internal rotation is complete increases the liability to laceration in and around the cervix.

Some textbooks on obstetrics convey the impression that dilatation, flexion, internal rotation, and descent of the presenting part are synchronous movements, beginning with the onset of labor. Many interns have that conception. Progress of labor is confused with advance of the presenting part. More attention in the first stage should be focused on dilatation than on descent. Progress and advance are not synonymous. Everyone has observed, particularly in the multipara, that the head is frequently at the inlet and not engaged until the first stage is complete and that then flexion, internal

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rotation, descent, and even delivery may be completed by one hard contraction. That this is not more widely known accounts for many precipitant labors.

Usually in multipara, not uncommonly in primipara, especially in occipit posterior positions with deflection of the head, advance does not always occur until dilatation is complete. If progress is confused with advance, as it frequently is, ill-advised attempts at delivery are instituted because the situation is considered abnormal, not because labor is arrested. The grind of internal rotation and the forceful longitudinal pressure, with the cervix almost dilated, is frequently augmented by binder, pituitary extract, excessive straining, and forceps because the head is high. The cervix is pushed downward by the presenting part, and frequently the anterior lip is caught between it and the symphysis and dragged still further downward. The inevitable results are tears in the fascia, and the pelvic organs are stripped from their attachments. Subsequent subinvolution, early activity, and increased intra-abdominal pressure may complete the unfortunate picture with first and second degrees of prolapse, atrophy of tissues later in life, and even advanced types of prolapse.

The delay of progress in labor is associated with various conditions: pelvic deformity; disproportion, maternal or fetal, or both; malpositions; breech; tumors; or anomalies of the power of labor. Delayed labor implies prolonged pressure and protracted overstretching. Prolonged pressure increases edema and friability of tissue, decreases the probabilities of physiological progress, and increases the damage of tissue because operative interference is high. Interference in the first or second stage of labor does not necessarily mean poor obstetrical management, for studied intervention, in the presence of definite pathological conditions, lessens the chances of injury to tissues with decreased resistance.

Prolonged labor is usually associated with two conditions: a full bladder and a full rectum, both of which are potent in increasing the likelihood of trauma. The bladder is firmly connected with the cervix and pubis, and the damage caused by straining against its incompressible contents causes a separation of these fascial connections and a subsequent sliding of the segment with bladder prolapse. The rectum is closely allied with the posterior vagina through the rectovaginal fascia, and by fascial bands to the coccyx and sacrum behind. Pressure against a rectum overdistended with hard fecal matter causes tearing in the rectovaginal fascia with potential rectocele, which is pulled back by its attachment posteriorly.

Complete dilatation and retraction are essential to normal delivery. Most damage to the upper pelvic floor occurs through operative attempts at delivery before complete dilatation. The unpardonable obstetrical error is the delivery by forceps through the undilated cervix, because it is impossible without serious tissue damage. Mechanical aids to delivery such as the abdominal binder, forceful straining with straps, or pituitary extract, are equally deserving of condemnation. Straining by the patient is physiologically sound only when dilatation is complete, not when *almost* complete.

Injuries to the perineum usually result from management of labor in the second stage. An important etiological factor is the desire to deliver without laceration, allowing the head to press and bruise and overstretch the vagina for hours. Mechanical interference, with undue haste in effecting delivery, particularly when the forces applied to the forceps are not in the axis of the canal, materially increases the damage of all pelvic tissue. Such delivery in the presence of disproportion augments greatly the probabilities of tissue damage. Pressure from an unyielding perineum forces the presenting part against the structures of the upper segment and increases damage above as well as below.

The proper repair of all lacerations is a prophylactic measure to subsequent prolapse. Repair does not mean one, two, or three stitches inserted equidistant and tied so that the skin edges approximate. Adequate restoration of torn or cut tissues implies a careful restoration of individual severed tissue. Proper aseptic repair decreases the incidence of sepsis, and sepsis delays involution. The sepsis following abortion particularly after curettage, when the cervix is pulled far out, may cause a retrodisplacement, tissue injury, and delayed involution.

Delayed involution implies softness, laxity, and hyperextension of the suspensory apparatus and frequently a large uterus which falls backward. The traumatized supporting structures cannot withstand the extra strain, especially with increased intra-abdominal pressure, and gradually increasing prolapse results. Asepsis in labor is essential to proper involution, for complete involution decreases the burden of the supporting structure.

The puerperium is not without etiological significance. The interrelationship between suspensory and supporting apparatus which successively maintains the pelvic organs in position is essentially strong tissue. Some bruising, stretching and even tearing, is inevitable. Constitutional inferiority of tissue and excessive bruising of tissue demand sufficient rest and inactivity to allow of proper healing. This predisposing factor may be eliminated by the skillful management of the puerperium with emphasis on restrengthening the muscles of the abdomen and floor of the pelvis.

Intra-abdominal pressure in the presence of weakened supporting tissues is a very definite factor in maintaining and in increasing relaxation. Increased pressure must be avoided during the lying-in period, particularly during early attempts at urination and defecation, and a too early resumption of normal activity.

Conditions other than congenital causes not associated with pregnancy may be presumed to cause prolapse. The weight increase of tumors, hypertrophy of the cervix, faulty dress, resulting effects of pelvic inflammation, severe and constant effort and general debility in elderly women may be auxiliary, but practically never determining factors. The opinion has been expressed by many that prolapse

does not occur after accidents unless there is a fundamental defect predisposing to hernia.

DISCUSSION

NORMAN H. WILLIAMS, M. D. (1052 West Sixth Street, Los Angeles)—In his analysis of the causes of pelvic relaxation and prolapse Doctor Vruwink has by direction and implication developed prophylactic as well as remedial measures which, if carefully practiced, would diminish many of the ill results common in obstetrics. The mortality in obstetrics can be fairly well estimated, whereas the stupendous amount of morbidity can only be surmised. That it is all too common, however, is the daily observation of physicians. To be sure, there are inherent and constitutional factors predisposing to these results. On the other hand, much can be done to reduce the acquired injuries attendant upon childbirth as suggested in this discourse. The science of obstetrics has progressed slowly, as compared with many other branches of medicine. In prenatal care and in the application of aseptic principles its development has been greatest. Probably the most important phase for future progress lies in the reduction of maternal morbidity. This will develop only as higher ideals are formed and maintained by those engaged in this practice; as more and more the commonplace evaluation placed upon it by both physician and the nonmedical public gives way to its rightful place among the other branches of medicine; when there are fewer who practice mainly to retain the family clientele and more devote their entire energy and intelligence to it as a specialty.

HENRY A. STEPHENSON, M. D. (516 Sutter Street, San Francisco)—The essayist has indeed covered the subject in a most thorough and efficient manner. His division into constitutional and acquired causes is very good.

Inasmuch as the acquired causes are to a very large extent preventable, it seems to me that we should give most of our attention to them. The following seem to me to be the ones most often concerned in this particular condition:

1. Confinements in rapid succession.
2. Haste in delivery, particularly operative cases.
3. Neglect of lacerations in the anterior portion of the vagina, even when they seem very superficial.
4. Allowing patients out of bed too soon after delivery.
5. Malpositions following confinement.

The obstetrician and physician doing obstetrics should try to avoid these five factors, and by so doing prevent, in the majority of cases, pelvic prolapse.

Teaching of Gastro-Enterology in Our Medical Schools—In order to determine what position, if any, gastro-enterology occupies in the curriculum of undergraduate medical schools, Sidney K. Simon, New Orleans (Journal A. M. A.), collected information by means of a questionnaire. An analysis of sixty-six replies received shows that sixteen schools have made provision for a special place for gastro-enterology in the curriculum. In thirty-five schools special hours are devoted to the subject. In six schools a chair or subchair of gastro-enterology has been established. Simon is of the opinion that gastro-enterology is now in a position to press its just claim for recognition on the curriculum of the undergraduate school. He agrees with the prevailing sentiment of the authorities on medical education that a certain concentration of authority in the major clinical branches, three or four at the most, is necessary in order to conform with the real intent of undergraduate study, namely, to turn out general practitioners of medicine. Each special subject, though treated as a distinct subdivision, should be brought under the centralized control of the departmental chief. Nonetheless, the fact remains that gastro-enterology is fairly entitled to recognition in the plan of undergraduate teaching, and it is equally undeniable that instruction in the subject is best given by those possessing special training and experience in this particular field of work.

Of the 7000 prisoners in federal penitentiaries, 35 per cent are violators of the narcotic law.

COMPLICATIONS FOLLOWING PROSTATECTOMY

By J. C. NEGLEY *

DISCUSSION *by W. B. Parker, Los Angeles; Edward W. Beach, Sacramento; R. L. Rigdon, San Francisco.*

THIS résumé, from the records of the Los Angeles General Hospital, covers the work of the entire staff from the oldest senior to the resident urologist and includes only cases of simple benign hypertrophy that had complete removal of the gland by the suprapubic route. No cases are included which developed complications after leaving the hospital, and most of them were under observation for a month or less. In all, 250 patients were operated upon. Bronchopneumonia occurred in 11 patients; myocarditis in 3; pyelonephritis in 3; peritonitis in 1; and hemorrhage in 2. Of the less serious complications, epididymitis, seven single and two double occurred in nine patients. Seven patients had residual urine, six of them had a half-ounce or less, and one had three ounces. Suprapubic fistula occurred three times in patients with residual urine. Contracture of the bladder neck troubled one patient; psychoses occurred in two patients, one of whom had a four plus Wassermann; and the other, from his history, had been somewhat subject to transient attacks of mental aberration for fifteen years.

Bronchopneumonia—In both the fatal and milder cases, bronchopneumonia began on or after the ninth postoperative day. As all patients had spinal anesthesia, the cause of the pneumonia cannot be laid to bronchial irritation from general anesthetic. Most of these patients had respiratory infection with coryza, sneezing, sore throat, and later a cough. It is a question whether such pneumonias originate with the patients from some already long-existing foci, or from sources outside the body. Since the vast majority of these patients have infective foci somewhere, it is my opinion that most of the bronchopneumonias originate in the patients and not from outside sources, so that prophylaxis against this complication must be directed against things existing within the patient. Infective foci should be removed, resistance built up and, above all, these debilitated old men should be kept in bed for a week or ten days and not subjected to exposure or exhaustion in the first few days after operation. All irrigations, dressings and treatments also should be done in bed for the first week at least. Needless to say, no patient with even a slight cough, rales, recent bronchitis, or other respiratory infection should be operated upon until he has fully recovered. Care should be taken that the patient does not have abdominal distention to such an extent as to cause pressure upon the diaphragm, thereby causing shal-

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